UNIVERSITY OF GONDAR

COLLEGE OF MEDICINE AND HEALTH SCIENCES

INSTITUTE OF PUBLIC HEALTH

Household heads perceptions and associated factors on micro and small solid waste collection enterprise in Gondar city, northwest Ethiopia

By

Mulu Kassa Belay

Advisors

1. **Mr. Daniel Haile (Assist.Prof.)**

2. **Mr. Resom Berhe (Bsc,MPH.)**

A THESIS TO BE SUBMITTED TO THE INSTITUTE OF PUBLIC HEALTH, COLLEGE OF MEDICINE AND HEALTH SCIENCES, UNIVERCITY OF GONDAR, INPARTIAL FULLFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTERS OF PUBLIC HEALTH.

JUNE, 2015

GONDAR, ETHIOPIA

UNIVERSITY OF GONDAR

COLLEGE OF MEDICINE AND HEALTH SCIENCES

INSTITUTE OF PUBLIC HEALTH

Community perception and associated factors on micro and small solid waste collection enterprise in Gondar city, northwest Ethiopia

By: **Mulu Kassa**

Mobile: +, 251-0918-036709

Email-kassamulu44 @gmail.com

Approved by the Examining Board

_____ _____

Director, Institute of Public Health

Advisors

1. **Mr. Daniel Haile** _____
2. **Mr. Resom Berhie** _____

_____ _____

Examiner

Acknowledgment

First and for most, I would like to express my deepest gratitude to my thesis advisors Mr. Daniel Haile (Assist.prof) and Mr. Resom Berhe(MPH) for their unreserved supports and guidance during the whole process of developing the study.

I would also like to thank university of Gondar for giving me the opportunity to learn.

My thanks also extend to supervisors and data collectors of the field activity as well as Gondar city municipal office and statistical agency.

Finally I would like to thank all respondents who voluntarily participated.

Contents

List of figures

List of tables

List of abbreviations

AOR Adjusted Odes Ratio

COR Crude odes Ratio

CI Confidence Interval

COR Crude odes Ratio

EPA Environmental Protection Agency

EPI ENFO Epidemiology Information

IMSWM Integrated Municipal Solid Waste Management

MSEs Micro and Small Enterprises

MSWM Municipal Solid Waste Management

NGO'S Nongovernmental Organizations

OR Odds Ratio

SPSS Statistical Packages for Social Sciences

UNEP United Nation Environmental Program

Abstract

Introduction: Community perception is one of the crucial issues which determines the success or failure of solid waste collection system.

Objectives: To assess household heads perceptions and associated factors towards solid waste collection micro and small enterprises in Gondar city, North West Ethiopia, 2015.

Methods: Community based cross-sectional quantitative study was employed and study participants were selected by multi stage sampling using simple random and systematic random sampling technique. Ten Health extension workers and two environmental health professionals were used for data collections and supervisions. Pre tested structured questionnaire and observational check list were used. Bivaraite analysis was used primarily to check which variables have an association with the dependent variable. Variables found to have an association with the dependant variable was entered in to multivariate logistic regressions. Finally the variables which have significant association were identified using OR, with 95% CI and cut point of P- value 0.2 and 0.05 for crude and adjusted ratio respectively.

Result: The study showed that the total respondents who had positive perception on solid waste collection micro and small enterprises were 301(52.1%). Among the respondents Females were 1.45 times more likely perceived on solid waste collection MSEs (AOR = 1.45 CI 95% (1.03-2.03) compared to males. The respondents who correctly practiced solid waste storage and separation were 1.68 times more likely (AOR = 1.68 CI 95% (1.17-2.39) compared to incorrectly practice. Respondents who stored solid waste one week were 2.17 times more likely had positive perception (AOR = 2.17 CI 95% (1.50-3.13) compared who stored more than one week.

Conclusions: household heads perceptions on solid waste collection micro and small enterprises in Gondar city found to be good. Sex, duration of solid waste storage, and Onsite solid waste storage and separation practice were factors associated with Community perception on solid waste collection micro and small enterprises

Key words: perceptions, solid waste, practice

1. Introduction

1.1. Statement of the problem

Solid waste is by product of human activities which tends to increase with rapid urbanization, improved living standards and changing consumption patterns. Management of increasing amounts of solid waste has become a major challenge in many cities in developing countries. If solid waste is properly used, solid waste can be a valuable resource, but if solid waste is not effectively managed, as result a serious adverse impacts on environment and public health(1).

Therefore Solid waste collection is a critical component within urban sanitation and also one of the most important and resource intensive services provided by municipalities. Solid Waste collection is considered to be the most important component of any waste management system because solid waste collection is the most expensive and visible part of the system. Therefore, properly designed and executed waste collection systems can result in significant savings and reduction in environmental and public health risks (1).

Country wide average rates of waste generation in most industrialized countries lie between 0.8 and 1.4 kg per capita per day. In developing countries the average generation rate is within the range of 0.3 to 0.5 kg per capita per day (2).

Solid waste management is emerging as a major public health and environmental concern in the urban areas of many developing regions (3).

Globally, millions of tons of municipal solid waste are generated every day. Urban waste management is drawing increasing attention, as it can easily be observed that too much garbage is lying uncollected in the streets, causing inconvenience environmental pollution, and posing a public health risk **.**Solid waste management problem in Africa has come with urbanization in the developing world. An important feature of the urbanization of the developing world is the rapid growth of cities and metropolitan areas. The high rate of urbanization in African countries implies a rapid accumulation of refuse(4).

In most of the Ethiopian cities, collection of solid waste in most of the cities is difficult and complex because the generation of residential is diffuse process that takes place in every house (5).

Currently in Gondar city, still there are solid waste collection problem which are on time collection, willingness to pay, inaccessible services, solid wastes found in rivers, solid waste disposed in open areas and drainage, frequency to pick up the collected Solid waste sorting at the source, Containers and bins are not functional and the service delivery is not sufficient and in proper manner(city sanitation beautification and parks development department, 2014)

The major effects of poor solid waste collection system is : blocked drains, flooding, water pollution, soil pollution, air pollution and unaesthetic dump which end up the community health problems and loss of satisfaction(6).

1.2 Literature review

1.2.1 Solid waste collection system

According to united nation environmental programme Integrated Solid Waste Management (ISWM) takes an overall approach to create sustainable systems that are economically affordable, socially acceptable and environmentally effective(7).Environmental Protection Agency(EPA) description, Solid waste collection programs in different communities vary greatly depending on the waste types collected, the characteristics of the community and the preferences of its residents. Often, different collection equipment, methods, or service providers are required in the same community to serve different customers(8).

A United States environmental programme a study found that once a week systems collect 25 % more solid waste per collection hour, while serving 33 % fewer homes during that period. Personnel and equipment requirements were 50 percent higher for once-a-week collection. Some communities with hot, humid climates maintain twice-a-week service because of health and odour concerns(9).

1.2.2 Household heads perceptions on solid waste collection systems

The study conducted in Malaya's 86% of the population was satisfied with the current waste collection frequency and management services. This probably resulted from the high efficiency among the waste collection Contractors in ensuring wastes are properly collected from their service area(10).

Based on study conducted in Italy respondents are believed that allergies, cancer and infectious diseases were linked to improper waste management. With regard to attitudes, 94.3% indicated that the number of diseases associated to the environmental pollution is increasing and the average perceived risk scores of contracting infectious diseases and cancer due to solid waste management were measured by a Likert scale from 1 to 5 with the higher scores representing high perception, 8.3 and 8.6 respectively, and 44.1% and 54.3%indicated a score of 10. Respondents with a higher perceived risk of developing cancer due to solid waste burning were females, younger, with an educational level lower than university and belief that cancer is linked to improper waste management(11).

The study conducted in Sierra Leone showed that, there are some kind of relationship between the respondents' level of education and their perceptions about cleaning their own surroundings. A higher percentage of those with relatively higher education thought that it was appropriate for individuals to clean their own surroundings. That were74% of the respondents does not educate their households on the need to clean the surroundings while about 26% do. Because of its inadequate equipment which is also a result of limited finances and lack of modern equipment and personnel. These problems coupled with the attitudinal and perceptual problems further increase the ineffectiveness of the solid waste management in the city(12).

In developing countries solid waste collection system shows major problems due to low collection coverage and irregular collection services, crude open dumping and burning without air and water pollution control, the breeding of flies and vermin. In Cameroon, private and public systems are able to collect between 30 to 50 percent of solid wastes are disposed in ways that affect the environment and public health. In most African cities until two decades ago, solid waste management policies and programs were formulated and implemented by government agencies without significant public participation. However, in my study will focus on community perception because without community participation proper solid waste collection service may not be achieved(13).

The number of population income of the dwellers and revenue of towns/cities also affect the amount of generated wastes. Urban areas with higher number of population generate higher amount of solid wastes as compared with lower number of population having comparable income. Income is also an important factor where the consumption of dwellers with higher income is relatively higher than the lower income group with corresponding generation of relatively higher amount of solid wastes(14).

Hence, perception is one of the crucial issues which determine the success or failure of solid waste management system. In order to change solid waste management significantly, the perception of individuals and groups in the society will have to change. In this regard, the attitudinal change of the government, the private sector, individuals and NGOs are importance(14).

The study conducted in Zambia shows that, households were asked what they thought about solid waste separation in their homes. Forty percent said separation was a good idea while 60% said they did not support separation because separation is time wasting and a dirty job. This, therefore, should be done at the collection points or at the landfill. The behaviour of households on waste separation at source found that 59.4% of the households separate some of their waste. The other households separated the waste because they wanted it disposed of efficiently and in order to make manure from the separated waste ((15).

These represented 22.8% and 7.2% of the households Most of the households who practised waste separation reported that they separate the waste into different types before they dispose it in different garbage bags (some of the separated solid waste is put in different corners not necessarily in plastic bags or containers). They do not separate waste after mixing it up. They reported that the items which they think can be re-used or recycled are not mixed with the rest of the garbage. However, those households who have adequate space in their yards normally throw waste in the backyard and remove plastics when the garbage is dry (15).

In Ethiopia the study indicated that almost all the households dispose solid wastes in open dump, open piton by open burning. This leads to a polluted environment. That household's dispose waste in open fields was 67 %. This finding is not different from a similar study conducted in particular Haramya woreda was reported that open disposal of refuse is practiced in about 93.4% of the households(16).

1.2.3 Factors that affect household heads perceptions

Socio-demographic factors;The study conducted in India indicated that, gender, age, education and number of persons in the household, employment status and income of respondents were investigated to analyzed respondents attitude, perception and their willingness to participate in solid waste collection very much needed for any solid waste management activities. Without households involvement in solid waste management; "Waste from Wealth" cannot be achieved. The perception and willingness of the residents for the management of waste was found that majority of them do not care on the final disposal of the waste. On an average 63% of the households are willing to participate for the better management of waste.

As waste management is a concerted effort of all stakeholders – civic agencies, municipalities, NGO's government and the rag pickers, each one has to play an active role in making it a success. About 14.2% of the households are aware about the generation of solid waste and the majority of the households (85.2%) are not aware about the solid waste generation and their disposal. community Perception are very much need for any solid waste collection activities. Without households involvement in solid waste management proper solid waste cannot be achieved(17)

Environmental and personal factors; The existence of numerous factors which made them to practice those disposal methods are lack of collection container in a near distance, absence of enough disposal sites, absence of planned solid waste collection activity by the municipality, open dumping and open burning are easy to get rid their solid wastes, are some of the factors mentioned by households(18).

When looking into more detail on individual collection coverage of different solid waste generators there are significant differences in service performance. According to the private waste company, approximately70% of the total waste generated in the household's and 80% from the commercial sector is collected. Also, street sweeping collects roughly 70% of litter laying on the 35 km of sealed roads of Bahir Dar. In contrast, only about 50% of waste generated by institutions is collected as many institutions handle (burn or dispose) their waste themselves (19).

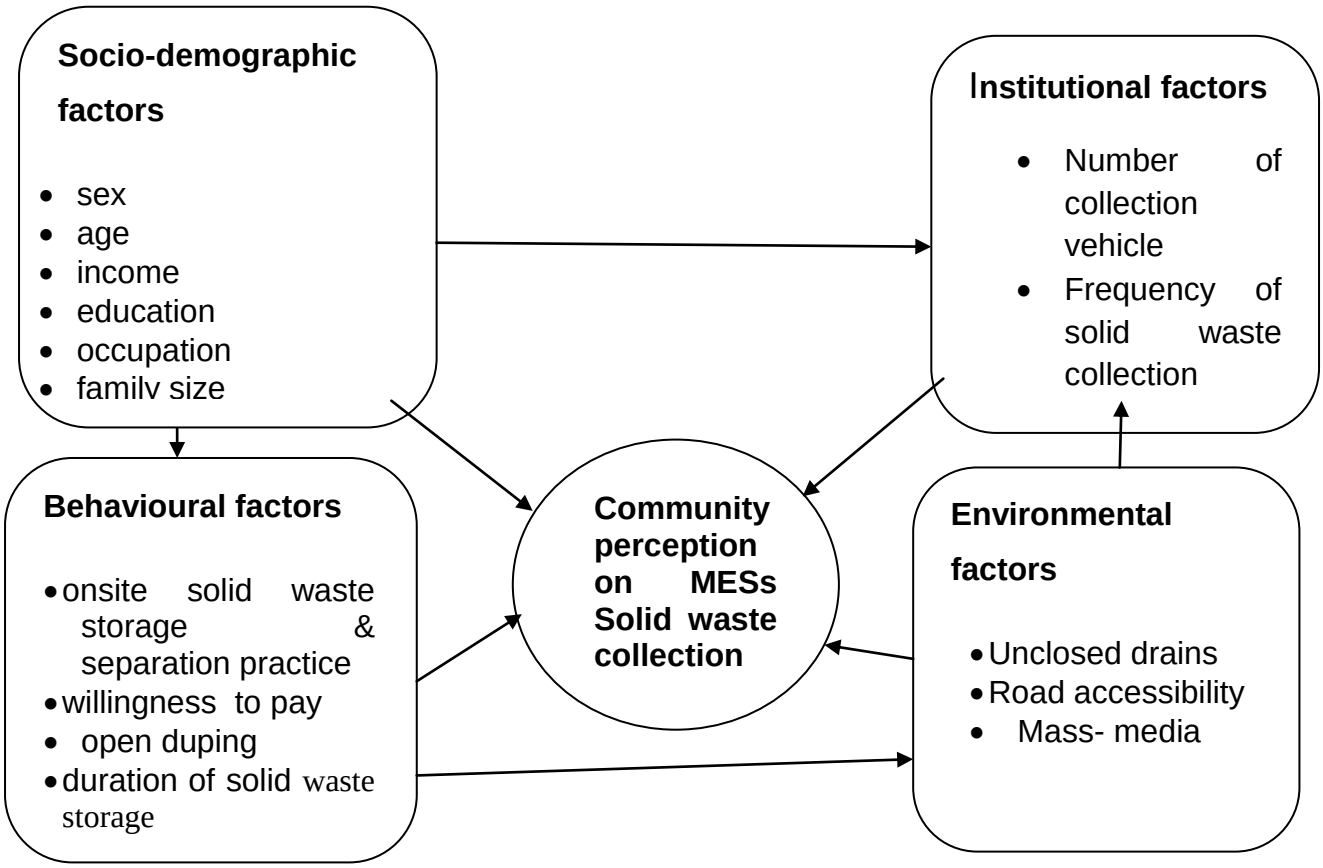

Fig 1. Conceptual frame work of household heads perceptions on micro and small solid waste collection enterprises.

1.3. Justification of the study

Providing proper solid waste collection for people is critical for their healthy environment and prevention of disease beyond the right for development.

In most of the Ethiopian cities, collection of solid waste in most of the cities is difficult and complex because the generation of residential is diffuse process that takes place in every house (5).

Currently in Gondar city, still there are solid waste collection problem which are on time collection, willingness to pay, inaccessible services, solid wastes found in rivers, solid waste disposed in open areas and drainage, frequency to pick up the collected Solid waste separating at the source, Containers and bins are not functional and the service delivery is not sufficient and in proper manner(city sanitation beautification and parks development department, 2014

Therefore, the aim this study identifies the gaps of household heads perceptions and associated factors on micro and small solid waste collection enterprises

2. Objectives

2.1. General objective

To assess household heads perceptions and associated factors on micro and small solid waste collection enterprises in Gondar city, northwest Ethiopia, 2015.

2.2. Specific objectives

To determine household heads perceptions on micro and small solid waste collection enterprises

To identify factors associated with household heads perceptions on micro and small solid waste collection enterprises.

3. Methods and materials

3.1 Study design:

A community based cross-sectional quantitative study was employed

3.2 Study area and period:

The study was conducted in Gondar city, which is located 748 KM away from Addis Ababa, the capital city of Ethiopia, to the Northwest direction, from April 15 to June 2015.

3.3 source and study population

All heads of household in Gondar city

The study population was heads of households in the randomly selected sub cities in Gondar city

3.4 Inclusion and exclusion criteria

Heads of households in the selected sub cities of Gondar city was included.

Severely sick heads of households during data collection period was excluded

3.5 Sample size and sampling procedures:

Sample size was determined using the formula for single population proportion, by taking the following assumptions into account Since there where similar researches done on community perception of household solid waste management practice in Debre birhan, p is set to be 25 % and at 95% C.I with 10% none response rate was used (12) .

z=1.96, C.I =95%

p=25%,

d= $(0.05)^{2}$-margine error

Design effect =2

None response rate =10%

n= $\frac{(z\alpha/2)\ 2p\ (1-p)}{d^2}$ = $\frac{(1.96)2 * 0.25(0.75)}{0.0025}$ = 288*2=576+27= 605

Since the sampling procedure was multistage, the sampling technique to select the sub cities was simple random sampling. From all 12 sub cities, 4 sub cities were

selected by simple random sampling technique. Individual houses in the selected sub cities were selected using a systematic random sampling technique and the numbers of household heads sampled from the selected sub cities were determined using proportionate-to population size. Each respondent in selected household was interviewed. If the selected house was closed during data collection, the interviewers would be visit the household two times at different time intervals. But if failed to get them at the specified time, the household was excluded from the survey and replaced by the next nearest households.

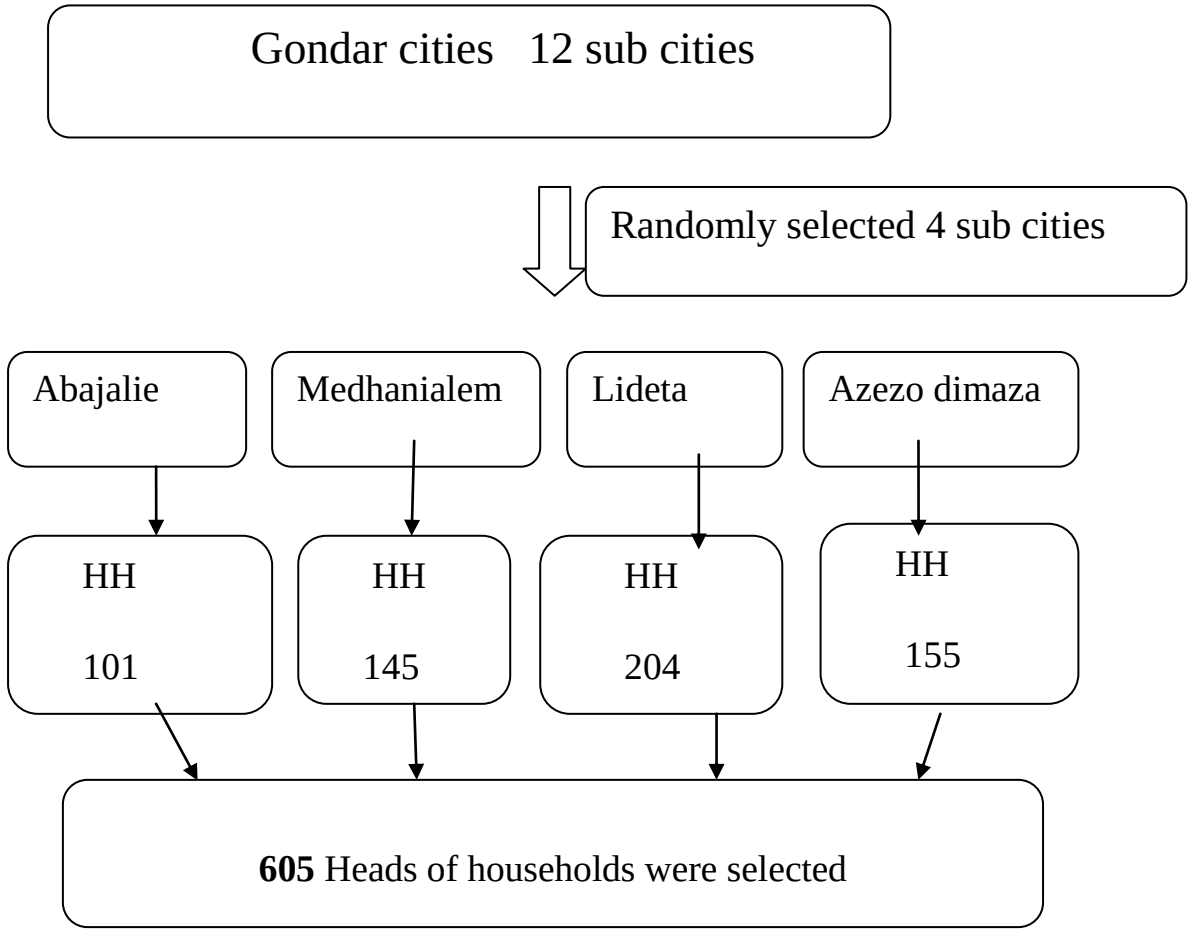

Fig.2 Schematic diagram of sampling procedure

3.6 Study variables

3.6.1. Outcome variable (dependent variables)

- Community perception on micro and small solid waste collection enterprises

3.6.2. Explanatory (independent) variables

- Socio demographic factors: age, sex. Marital status, employment status, educational level, respondent income and family numbers.
- Personal /behavioural factors: solid waste collection Practice, willingness to pay, duration of solid waste storage, open dump
- Environmental factors: road accessibility for waste collection, unclosed drainage, and mass-media and other sources.
- Institutional factors: number of solid waste collection vehicle and Frequency of solid waste collection.

3.7 Operational definitions

Solid waste: The solid waste collected by the enterprises at the time of data collection that generated from each household heads houses.

Positive perception: The household heads who respond the perception questions above the mean. To found the mean, I had sum 13 perceptions questions and tested the normality.

Negative perception: The study subjects who respond the perceptions questions below the mean**.** To found the mean, I had sum 13 perceptions questions and tested the normality.

3.8 Data collection procedure:

Data was collected using structured pre-tested questionnaire and observational checklist. . The questionnaire was prepared in English then translated to local language (Amharic) and data was collected by interviewing. Two supervisors and ten data collectors (Health extension workers) were participated in the data collection process. Three days intensive training was given to the data collectors and supervisors on how to collect data. Special emphasis has been given on how to establish mutual trust before data collection.

3.9 Data processing and analysis

The returned questionnaires were checked for completeness, cleaned manually and entered in to Epi- Info Version 7 statistical software and then exported to SPSS windows version 20 for further analysis. Frequencies, percentage and cross tabulations were used to summarize descriptive statistics of the data and tables, pie chart & graphs were used for data presentation. Bivaraiate analysis was used primarily to check which variables have association with dependent variable individually. Independent variables found to have an association with the dependent variable was entered in to multiple logistic regression for controlling the possible effect of cofounders and finally the independent variables which had significant association was identified on the basis of odds ratio (OR), with 95% confidence interval (CI) and p-value to fit in to the final regression model.

3.10 **Data Quality control**

Structure questionnaires properly developed, pre-testing 5% of the question and given training for data collectors and supervisors.

3.11. Ethical considerations

Ethical clearance will be obtained from the ethical review board of university of Gondar. Communication with the Gondar town and different sub cities would be made through formal letter obtained from the University of Gondar. All the study participants were informed about the objective and benefits of participating in the study and obtain written consent before conducting data collection. Participants were also being informed that participation would be on voluntary basis and they can withdraw any time from the study. Privacy and confidentiality of the information had been assured and collected anonymously.

3.12. Dissemination of results

The findings of the study would be forwarded to university of Gondar, institute of public health, Gondar city Health office, Gondar city solid waste municipal office, North Gondar zone health Department, North Gondar zone solid waste municipality development Department, Amharic regional Health Bureau and Amhara regional solid waste municipality Bureau. An attempt will be made to present the findings in different conferences, workshops and will be sent to publication on scientific journal.

4. RESULTS

4.1 Socio- Demographic Characteristics of the household heads in Gondar town, 2015.

Out of the total 605 sampled heads of household, 578 heads of household were interviewed and included in the analysis, which made the response rate 95%. The mean age of respondents was 48 .03 (SD ±12.97) years

Tabele-1 socio demographic characteristics of household heads on micro and small solid waste collection enterprises in Gondar city, 2015.

Variable	Variable category	Frequency	%
Sex			
	Male	302	52.2
	Female	276	47.8
Age			
	21-30	40	6.9
	31-40	144	24.9
	41-50	203	35.1
	51-60	104	18.0
	>61	87	15.1
Marital status			
	Single	81	14.0
	Married	406	70.2
	divorced and widowed	91	15.7
Employment status			
	Merchant	130	22.5
	government employees	145	25.1
	Privet	196	33.9
	daily laborer	107	18.5
Family size			
	1-3	200	34.6
	4-6	290	50.2
	>7	88	15.2
Educational level			
	cannot read write	48	8.3
	can read and write	73	12.6
	primary school complete	88	15.2
	secondary school complete	164	28.4
	diploma and above	205	35.5

4.2 Household heads perceptions towards micro and small solid waste collection enterprises

Out of the total respondents towards solid waste collection MSEs 301 (52.1%) of respondents had positive perception.

Out of the total respondents 308 (53.3) of respondents agreed that solid waste should be collected once per week was preferable. And 295(51.0%) of respondents agreed that the road is accessible for solid waste collection vehicles. Regarding temporary solid waste storage site 427(73.9%) of the respondents agreed that there was odor problem. And out of the total respondents 462(79.9%) agreed that solid waste should be separated by MSEs.

Regarding number of MSEs Vehicles 447(77.3%) of the respondents did not agree that the vehicles were enough. In terms the current MSEs serves 412(71.3%) of the respondents did not agree that service were enough .regarding regularity of MSEs solid waste collection 345(59.7%) of the respondents agreed.(See table -2)

Table – 2 Household heads perceptions towards micro and small scale solid waste collection enterprises

Variables	Variable category	Frequency	%
MSEs provides which dump solid waste in to unclosed drainage should be punished			
	Agree	456	78.9
	Disagree	122	21.1
The road is accessible for MSEs solid waste collectors			
	Agree	298	51.0
	Disagree	283	49.0
Solid waste collection once per week is preferable			
	Agree	308	53.3
	Disagree	270	46.7
Proper solid waste collection is important			
	Agree	571	98.8
	Disagree	7	1.2
Solid waste should be separated by MSEs			
	Agree	462	79.9
	Disagree	116	20.1
Payment for MSEs is enough			
	Agree	267	46.2
	Disagree	311	53.8
Odor problem of temporary solid waste collection site			
	Agree	427	73.9
	Disagree	151	26.1
The road is accessible for MSEs			
	Agree	298	51.0
	Disagree	283	49.0
Impacts of Improper solid waste collection on health			
	Agree	549	95.0
	Disagree	29	5.0
Attitude of MSEs providers were positive			
	Agree	255	44.1
	Disagree	323	55.9

4.3 Household heads practice towards onsite solid waste storage and separation

Regarding practice onsite solid waste storage and separation towards total household heads perceptions on MSEs solid waste collection 207 (35.8%) of the respondents practiced correctly i. e who respond above the mean > 5.04 of which 52% of the respondents had positive perception and 47.9% had negative perception.

Table- 3 Community practice towards onsite solid waste storage and separation

Variables	Variable category	Frequency	%
Closure of solid waste container after dumping waste			
	Yes	168	21.9
	No	410	70.9
Utilization of easy container for solid waste handling			
	Yes	326	56.4
	No	252	43.6
onsite Solid waste Separation before collection			
	Yes	578	100
	No		
Storage of solid waste in to a waste container			
	Yes	525	90.8
	No	53	9.2

4.4. Behavioral characteristics

Out of the total respondents, 403 (67.9%) were store solid waste one week in the house compound. while 175 (32.1) of the respondents stored above a week. Regarding the community willingness to pay, 477 (82.5%) of the respondents had positive perception for willingness to pay. Among the respondents, 234 (40.5%) of them heard information about solid waste collection from mass-media and other sources.

4.5 Association of variable with community perception towards micro and small scale solid waste collection

In Bivariatle analysis all independent variables were entered. and among socio demographic factors age, sex, marital status, family members living in the heads of household, educational level, employment status monthly income; And among behavioral factors, solid waste storage and separation practice, duration of solid waste storage , willingness to pay for MSEs service, and mass-media and others were included. Out of the factors sex, solid waste storage and separation practice and duration of solid waste storage were statistically significant.

All variables which have cut point p- value less than 0.2 with community perception on MSEs in bivvarite analysis were selected and entered to multivariate logistic regression analysis to identify the most important predictors of community perception.

While in multivariate analysis which have a cut point of p-value less than 0.05 was used for analysis. Females were 1.45 times more likely perceived on solid waste collection MSEs (AOR = 1.45 CI 95% (1.03-2.03) compared to males.

The respondents who practiced solid waste storage and separation were 1.68 times more likely (AOR = 1.68 CI 95% (1.17-2.39) compared to incorrectly practice.

Respondents who stored solid waste one week were 2.17 times more likely had positive perception (AOR = 2.17 CI 95% (1.50-3.13) compared who stored more than one week.

Table-4 Association of variables with community perception towards solid waste collection MSEs in Gondar city, northwest Ethiopia may, 2015

Variable	Variable category	Perception on MSEs Negative	positive	COR	AOR
sex					
	Male	157	145	1	1
	Female	120	156	1.40 (1.01-1.95)	1.45(1.03—2.03) *
Solid waste onsite practice					
	Poor practice	198	173	1	1
	Good practice	79	128	1.85(1.31-2.62)	1.68(1.17-2.39) *
Duration of waste storage					
	> one week	111	68	1	1
	One week	165	234	2.30(1.60-3.31)	2.17(1.50-3.13) **
Age					
	21-30	19	21	1	
	31-40	73	71	0.98(050-1.95)	
	41-50	97	106	1.33(064-2.75)	
	51-60	42	62	080(038-1.70)	
	>=60	46	41	0.88(0.43-1.77)	

5. Discussions

Community perception is determined the success or failure of solid waste collection system. In order to improve solid waste collection system the community perception will have to change.

Community perception on solid waste collection micro and small enterprises was assessed by using structure and which was developed on the related studies.

This study found that all of the community perception on solid waste collection enterprises 301(52.1%). This study found a solid waste collection by micro and small enterprise was higher than the study carried out in Debrebirhan 25% (Tyagi et al., 2014).

In contrast, lower than the study conducted in Malaysia 86 %(Fauziah et al., 2007).

The variation might be due to the difference in service providers of the country.

The Sex, on site solid waste storage & separation practice, and duration of solid waste storage were factors identified as factors associated with community perception on solid waste collection micro and small enterprises.

This study found sex as a factor for community perception on solid waste collection micro and small enterprises that females were 55% more likely perceived compared to males. Similarly a study conducted in Nigeria revealed that sex was significantly related. (Longe et al., 2009).

The reason could be females are more responsible for house management.

On site solid waste storage and separation practice were factors associated with community perception that respondents who correctly practiced were 32% more likely compared to incorrectly practiced, but lower than the study conducted in Zambia that is 59% (Anga et al., 2011).

The reason might be the difference of community awareness in the two countries.

This study found that, 83% of respondents were stored solid waste one week in the house compound compared to those who stored more than one week. The reason could be there is availability of solid waste container and the respondents who stored solid waste one week were understood it causes health impact.

6. Limitation of the study

The study design was cross-sectional which measures the exposure and outcome simultaneously .But cannot measure cause and effect relationship.

7. Conclusions

Community perception towards solid waste collection micro and small enterprises in Gondar city found to be closely good. Sex, duration of solid waste storage, and Onsite solid waste storage and separation practice were factors associated with Community perception on solid waste collection micro and small enterprises.

8 .Recommendations

- To the municipality
  - Encourage household heads to start on onsite solid waste storage and separation practice at home.
  - Micro and small solid waste collection enterprises should expand to other places where not started.
- To the community

  They should start proper solid waste storage and separation practice at source itself
- To researchers
  - Further study on onsite solid waste storage and separation practice is recommended.

9. References

1. **wateraid.** *Solid waste management in Nepal. 2008*.
2. **Urban Plans Sanitary Landfill Sites and Solid Waste Management Planning**. *Solid Waste Management Manual. Addis Ababa2012.*
3. **Rajamanikam1 R, Poyyamoli1 G, and SK, R1 L.** *The role of non-governmentalorganizations in residential solidwaste management: A case study ofPuducherry, a coastal city of India. Waste Management & Researc. 2014;32(9):867-81.*
4. **Yoada RM, Chirawurah D, Adongo PB.** *Domestic waste disposal practice and perceptionsof private sector waste management in urban Accra. 2014:471-2458.*
5. **Fekadu A, RadoTsega, Uttama, Reddy.** *Community Awareness of Solid Waste Management Practices: a case Study from Ethopia. 1993(5)*.
6. **city sanitation beautification and parks development department.** *municipal solid waste management. annual report 2014.*
7. u**nited Nations Environment Programme International Source on Environmentally Sound Technologies**. *Municipal Solid Waste Management 2004.*
8. **United StatesEnvironmental ProtectionAgency**. *Solid Wasteand Emergency Response 1999.*
9. **EPA.** *Decision Maker's Guide to Solid Waste Management. 1995;2.*
10. **Longe, Ukpebor, Long.** *PEOPLE'S PERCEPTION ON HOUSEHOLD SOLID WASTE MANAGEMENT. 2009;6 (3):201-8.*
11. **AlessandraSessaGabriella, DiGiuseppe, PaoloMarinelli, feredeItalo.** *Short Report Public concerns and behaviours towards solid waste management in AngelilloEuropean Journal of Public Health. 2009;20(6).*
12. **Vikrant Tyagi1*, Solomon Fantaw1, Sharma2 HR.** *Municipal Solid Waste Management in Debre Berhan City of Ethiopia. ISSN. 2014;4(5).*
13. **Eugenea A, Günter, Buschb.** *Community Based Solid Waste Management in Sub-Saharan Africa. The Case of Buea – Cameroon-11480. 2011*
14. **With Respect to Urban Plans,** *Sanitary Landfill Sites and Solid Waste Management Planning. 2012.*
15. **Banga, Margaret,** . *Household Knowledge, Attitudes and Practices in Solid Waste Segregation and Recycling. Zambia Social Science. 2011; 2(1).*
16. **Mengistie B, Baraki N,** . *Community based assessment on household management of waste and hygiene practices in Kersa Woreda. 2010;24(2).*
17. **KumarM, NardosNandini.** *Community attitude perception and willingness towards solid waste management in Bangalore city Karnataka India 2013;4(1).*

18. **Vikrant Tyagi1*, Solomon Fantaw1, Sharma2 HR.** *Municipal Solid Waste Management in Debre Berhan City of Ethiopia. ISSN 2014;4(5): .*
19. **Lohri CR, Camenzind EJ, Zurbrügg C.** *Waste Management Financial sustainability in municipal solid waste management - Costs and revenues in Bahir Dar, Ethiopia. 2014(34):542-52.*

10. ANNEXES

Annex-I: Consent Form:

University of Gondar

College of Medicine and health sciences

Institute of Public Health

Department of environmental Health and occupational Safety and Health

Questionnaire prepared to assess community perception on micro and small solid waste collection enterprises in Gondar City, North West Ethiopia.

My name is ----------. I am working in the research team of University of Gondar college of Medicine and health sciences institute of public health Department of environmental Health and occupational safety and health. I would like to ask you a few questions about an information that resulted in solid waste perception .This will help us to improve solid waste management, health and working environment services provided to you based on your answer to our questions. Your name will not be written in this form and will never be used in connection with any information you tell us. All information given by you will be kept strictly confidential. Your participation is voluntary and you are not obliged to answer any question you do not wish to answer. If you fill discomfort with the interview please fill free to drop it any time you want. This interview will take about 30 minutes. Do I have your permission to continue?

1. I f yes, continue to the next page 2. If no, skip to the next participant by writing reasons for his/ her refusal

Name and signature of the interviewer who sought the consent_____

Sub-city_____

Date of interview _____/_____/_____

Date/ Month /Year

Annex II. English version information sheet

Name of the investigator: Mulu Kassa

Name of organization: Gondar University, college of medicine and Health science institute of public Health

Name of sponsor: University of Gondar

Title of the study: Community perception on micro and small solid waste collection enterprises in Gondar City, North West Ethiopia.

Objective of the study: To assess community perception on micro and small solid waste collection enterprises in Gondar City, North West Ethiopia.

Introduction:

This information sheet and consent form is prepared to explain the study you are being asked to join. Please listen carefully and ask any questions about the study before you are agree to join. You may ask questions at any time after joining the study.

Procedure: To assess community perception on micro and small solid waste collection enterprises, we invite you to take part in this study. If you are willing to participate in this study, you need to understand and sign the agreement form. Then after, you will be interviewed by the data collector to give your response and you will be examined to patch test. You do not need to tell your name to the data collector and all your response will be kept confidentially by using coding system whereby no one will have access to your response.

Risk of the study: The study has no any risk for the participant and interview also will be private to make safe participants from management related problems and even the patch test will have no any side effect on your health.

Benefit of the study: The study participants will not get direct benefit for being participated. The result will be used as a baseline for further studies that can be done in these areas. The result will be dissimilated to the town solid waste municipality, Amhara National Regional State micro and small solid waste collection enterprises office.

Confidentiality: The information collected from this study will be kept confidential and information about you that will be collected by this study will be stored in a file,

without your name, but a code number assigned to it and it will not be revealed to anyone except the principal investigator and will be kept locked with key.

Right to refuse or withdraw: you have full right to refuse from participating in this research. You can choose not to respond to some or all questions if you do not want to give your response. You have also the full right to withdraw from this study at any time you wish, without losing any of your right.

Persons to contact:

1. Mulu Kassa

Phone: +251-918-03-67-09

Email: kassamulu44@gmail.com

Advisors

1. Daniel Haile

   Phone: +251-913-76-79-56

   Email:daneil.haile7@gmail.com

2. Resom Berhe

   Phone: +251-912-35-26-81

   Email: Resom.Berhe@GMAIL.COM

Annex III English version questionnaire

Table 1

S.N	Question	Response	Skip
Part-I	**Socio demographic and economic characteristics of study respondent**		
101	Age	-------	
102	Sex	1.Male 2.Female	
103	Marital status	1.Marred 2.Single 3.Divorced 4.Widowed	
104	Employment status	1.Farmer 2.Merchant 3.Civil servant 4.Privet 5.Unempleement 6. Others	

105	family number	----------	
106	Educational level	1.Illiterate 2.Read and write 3.Primary complete 4.Secondary complete 5.Higher education complete	
107	Income(monthly)	----------birr	
Part-2 Community perception on micro and small solid waste collection enterprise in Gondar city			
201	Do you think proper solid waste collection is important?	a. Strongly agree b. Agree c. Neutral d. Disagree e. Strongly disagree	
202	The service of MSEs service provider in your area is satisfactory?	a. strongly agree b. agree c. Neutral d. disagree e. strongly disagree	
203	Solid waste to be collected by MSEs once per week is preferable?	a. Strongly agree b. Agree c. Neutral d. Disagree e. Strongly disagree	
	.		
204	The solid waste should be separate by MSEs before collection?	a. Strongly agree b. Agree c. Neutral d. Disagree	

		e. Strongly disagree	
205	Do you agree MSEs provider have awareness about solid waste collection system?	a. strongly agree b. agree c. Neutral d. disagree e. strongly disagree	
206	Micro and small solid waste collection enterprise collection service is regular?	a. Strongly agree b. Agree c. Neutral d. Disagree e. Strongly disagree	
207	The MSEs solid waste collection vehicles are enough for collecting of solid waste?	1. Strongly agree 2.Agree 3. Neutral 4. Disagree 5.Strongly disagree	
208	The road for MSEs solid waste collection is accessible?	a. Strongly agree b. Agree c. Neutral d. Disagree e. Strongly disagree	
209	If there is large space area and un lose drainage MSEs should dispose solid waste in this area?	a. strongly agree b. agree	

		c. strongly disagree d. disagree	
210	The MSEs providers dumps a load of solid waste in un occupied piece of land, they should be punished.	a. Strongly agree b. Agree c. Neutral d. Disagree e. Strongly disagree	
211	If the MSEs service improves, the community willingness to pay will be increase?	a. Strongly agree b. Agree c. Neutral d. Disagree e. Strongly disagree	
212	The amount paid for MSEs is enough?	a. Strongly agree b. Agree c. Neutral d. Disagree e. Strongly disagree	

213	Do you think mass-media is important to gain information about solid waste collection?	a. strongly agree b. agree c. disagree d. strongly disagree	
214	The current solid waste collection service is enough	1. strongly agree 2. agree 3. disagree 4. strongly disagree 5. Neutral	
215	Temporary solid waste collection site in your house hold has odor problem until it pick up?	a. Strongly agree b. Agree c. Disagree d. Neutral e. Strongly disagree	
216	Improper solid waste collection has an impact on health	1. Strongly agree 2. Agree 3. Neutral 4. Disagree 5. Strongly disagree	
Part-3 Household heads solid waste separation and handling practices at household level			

301	Do you separate solid waste prior to onsite storage?	1.yes 2.No	
302	If No, give reasons for not doing so	1. No time 2. No practical purpose 3. Lack of storage container 4. Lack of awareness 5. Others	
303	Who in the household is responsible for solid waste separation?	1. Every one 2. Parents 3. Children 4. Paid workers 5. Females 6. Others	
304	Do you think you should separate solid waste before onsite storage?	1. Yes 2. No	
305	Do you think MSEs should separate solid waste?	1. Yes 2. No	
306	How often would you like solid waste to be clean in your household?	1. Every day 2. Once 3. Twice 4. 4. None	
307	Who handles household solid waste in to solid waste collection station?	1. Everybody 2. Parents 3. Paid workers 4. Male only 5. Female only	

308	How is solid waste store in your household before disposal?	1. Plastic bags 2. Sacks 3. Open containers 4. Closed containers 5. others -----	
309	How do see the way waste is stored in your household?	1. Not good 2. Not very good 3. Good 4. Very good 5. Others	
310	How long is solid waste stored in your household before disposal?	1. One day 2. Two-three days 3. Four-five days 4. Six –seven days 5. >seven days	

Observational check list

Part-4

401	Do you have temporary solid waste storage container?	1.yes 2.No	Remarks
402	does the solid waste container has a cover	1.yes 2.No	
403	Do you separate solid waste before on site storage?	1.yes 2.No	
404	Is there un closed drainage around your household?	1.yes 2.No	
405	Does the solid waste storage container is easy to use?	1.yes 2.No	
406	Does the way of solid waste storage is good?	1.yes 2.No	

Thank you for your participation!!!

Annex-IV Amharic version consent form

ቃለ ማጠይቅ ከመደረጉ በፊት የተሳታፊዎች ፍቃደኝነት ማጠየቂያ ቅጽ

የጎንደር ዩንበርስቲ ህክምናና ጠፍ ሳይንስ ትምህርት ቤት የሚበረሰብ ጠፍ አጠበበቅ ተቁም የአካባቢ ጠፍና የሞያ ደህንነትና ጠበነት ትምህረት ክፍል.

ይህ ማጠይቅ በጎንደር ከተማ አስተዳደር የሜኖሩ ማህበረሰቦች ስለ አነስተኛ ጥቃቅን ደረቅ ቆሻሻ ሰብሳቢ ማህበራት ቆሻሻ አሰባሰብ ላይ ጥናት ለማጥናት የተዘጋጀ ነው።

ጠፍ ይስጥልኝ----------እባላለሁ።እዚህ የመጣሁት ይህን ጥናት ለማካሄድ የጎንደር ዩንበርስቲ ህክምና እና ጠፍ ሳይንስ ትምህርት ቤት የሚበረሰብ ጠፍ አጠበበቅ ተቁም የአካባቢ ጠፍ እና የሞያ ደህንነትእና ጠበነት ትምህረት ክፍል በድን አባል በመሆን ነው።

ከዚህ በመቀጠል ስለ አነስተኛና ጥቃቅን የደረቅ ቆሻሻ ሰብሳቢ ማህበራት ያለዎትን ግንዛቤ የተወሰኑ ጥያቄዎችን ልጠይቅዎ እወዳለሁ። ከርስዎ የሚገኘው ሜልስ በሀገራችን ለሚከናዎነው የደረቅ ቆሻሻ አወጋገድ ስርዓት ለማሻሻል ከፍተኛ እገዛ ይኖረዋል።

ከእርስዎ የምገናቸወን ሜዥቸወም መልስ በሚሺጥር እንጠቢቃልን።ከዚህ ጥናት ጋር በተያያዘ በሜዥቸወም ቦታና ጊዜ ስምሞ እንደሜይጠፉና እንደሜይጠቀስ ልንገልጽዎ እንወዳለን።በአጠቃላይ ማጠይቁ ወደ 30 ደቂቃ ገደማ የሚወስድ ሲሆን በጥናቱ የምሳትፈዎ የእርስዎን ሙሉ ፈቃደኝነት ስናገኝ ብቻ ነው።በማጠይቁ ሂደት ለመመለስ የሜይፈልጉትን ጥያቄዎች ያለመመለስ መበትዎ የተጠበቀ ነው።

በጥናቱ ለመሳተፍ ፈቃደኛ ነዎ

1. አዎ ወደ ሜቀጥለው ይሸጋገሩ።
2. የለም ፈቃደኛ ያልሆኑበትን ምክነያቶች በሜዳፍ ወደ ሌለ ተጠየቂ ይሸጋገሩ።

ወጠት፡- 1 ተሜልቷል 2.ተጠየቂው አልተገኘም 3.ተቃወሞ 4.በከፊል ተሜልቷል

የተቆጣጣሪው ስሞ----------ፊርማ----------

---------ቀን----------

Annex V Amharic version information sheet

የጥናቱ ሚጀ መሰጫ

የዋና ተመራመሪ ስሞ ሙሉ ካሳ

የኢንስቲትዩቱ ስም -ጎንደር ዩኒቨርሲቲ

የምርምር ወጭ የሚሸፍነው የጎንደር ዩኒቨርሲቲ

የጥናቱ ርዕስ – በጎንደር ከተማ አስተዳደር የሚኖሩ ማህበረሰቦች ስለ አነስተኛና ጥቃቅን የደረቅ ቆሻሻ ሰብሳቢ ማህበራት ላይ ስለደረቅ ቆሻሻ አዎጋገድ ያላቸውን ግንዛቤ ለማወቅ

የጥናቱ አላማ በጎንደር ከተማ አስተዳደር የሚኖሩ ማህበረሰቦች ስለ አነስተኛና ጥቃቅን የደረቅ ቆሻሻ ሰብሳቢ ማህበራት ላይ ስለደረቅ ቆሻሻ አዎጋገድ ያላቸውን ግንዛቤ ለማወቅ የሚያጋጥሙ ተግዳሮቶችን መለየት

መግቢያ–ይህ የሚጀና የስምማት ቅፅ የተዘጋጀው ዕርስዎ ተሳታፊ እንዲሆኑ ለተጋበዙበት በምርምር ቡድኑ የሚከሄደውን ጥናት በተመለከተ የዕርስዎን ፈቃደኝነት ለማወቅ ነው፡ የምርምር ፕሮጀክቱ ዋና አላማ በጎንደር ከተማ አስተዳደር የሚኖሩ ማህበረሰቦች ስለ አነስተኛና ጥቃቅን የደረቅ ቆሻሻ ሰብሳቢ ማህበራት ላይ ስለደረቅ ቆሻሻ አዎጋገድ ያላቸውን ግንዛቤ ለማወቅ የሚያጋጥሙ ተግዳሮቶችን ለማጥናት ነው፡

የጥናቱ ዘዴ– አነስተኛና ጥቃቅን የደረቅ ቆሻሻ ሰብሳቢ ማህበራት አተገባበር ያላቸውን አመለካከት ለማወቅ በሚደረገው ጥናት ወስጥ እንዲሳተፉ የጋበዝንዎ ሲሆን ፈቃደኛ ከሆኑ ይህንን የስምማት ፎርም ይፈርማሉ፡፡ ከዚያ በኋላ ሚጀን በሚከበስቡ የትናት ቡድኑ አባላት አማካኝነት ምላሽዎን ለማወቅ ቃለ–ማጠየቅ ይደረግለወታል፡፡ በቃለ–ማጠየቁ ወቅት ስምወን መገር አያስፈልግም፡የሚጠሉ ሚጀም በሚሰጠር የሚዝ ሲሆን በተጨማሪም ማንም ሰው ወደ ሚጀው እንዲቀርብ አይደረግም፡

የትናቱ ጉዳት–ተሳታፊው በዚህ ጥናት ወስጥ በመሳተፉቸው የሚደርስባቸው ምንም አይነት ጉዳት የለም፡ ተሳታፊው የሚሰጠው የቃለ ማጠይቅ ሚጀም በሚስጥር ስለሚዝ ተሳታፊው ከአስተዳደራዊ ጫፍ ነፃ ነው፡

የጥናቱ ጥቅም ተሳታፊው በጥናቱ ተሳታፊ በማሆናቸው በቀጥታ የሚገኙት ጥቅም የለም፡

ከዚህ ጥናት የሚገኘው ወጤት የህብረተሰቡን ግንዛቤ በተመለከተ በአነስተኛና ጥቃቅን የደረቅ ቆሻሻ ሰብሳቢ ማህበራት ለሚከሄዱ ተመሳሳይ ጥናቶች እነደመሻሻ ግብዐት ያገለግላል፡፡

የጥናቱ ወጤት ለከተማው ደረቅቆሻሻ አስወጋጅ ፅ/ቤት ለከተማው አነስተኛና ጥቃቅን የደረቅ ቆሻሻ አደራጅ ፅ/ቤት እንዲሁም ጥናቱ ለተካሄደባቸው ክፍለ ከተሞች የ ደረቅ ቆሻሻ አዎጋገድ ስርዓትን ለማሻደግ እና ለመሻደፍ ይጠቅማል፡፡

ሚስጥራዊነቱ–በዚህ ጥናት የሚበሰበው ሚጀ ሚሰራዊነቱ የተጠበቀ ሲሆን ሚጀወም በፋይል ተደርጎ ሚሰራዊ ኮድ ተሰጥቶት ሥምዎን ሳይጨምር ተቆልፍፎ ይቀመጣል፡፡በተጨማሪም የሚሰጡ ሚጀ ከዋናው አጥኝ በስተቀር ለማንም ግልፅ አይደረግም፡

የመቃወሚና የሞረጥ መበት– በዚህ ጥናት ላይ የመሳተፍም ሆነ ያለ መሳተፍ ሙሉ መበትዎ የተጠበቀ ነው፡፡ በመሳተፍ ላይ እያሉም በማናቸውም ስአት ሞረጥ ወይም ከጥያቄዎቹ ወስጥ ለመሞለስ የሞይፈልጉት ጥያቄ ካለ አለመሞለስ ይቻላል፡፡

ከዚህ ጥናት ለመሳተፍ ፈቃደኛ ነዎት 1. አዎ 2. አይደለሁም

ለተጨማሪ ሞረጃ

ተሞራሞሪው

1. ሙሉ ካሳ

ስልክ፡ +251-918-03-67-09

email:kassamulu44@gmail.com

አማክሪዎች

1. ዳንኤል ሃይሌ

ስልክ፡ +251-913-76-79-56

email:daniel haile@gmail.com

2. ርዕሶም በርሄ

ስልክ፡ +251-912-35-26-81

email:Resom. berhe@gmail.com

ANNEX-vi Amharic version questionnaires

ክፍል አንድ ፡ ማህበራዊ ስነ-ህዝባዊ ገጽታዎችን በሚመለከት

ተ.ቁ	ጥያቄ	አማራጭ መልሶች		
101	ዕድሜ	----------		
102	ፆታ	1.ወንድ 2. ሴት		
103	የትምህርት ደረጃ	1. ማንበብና መጻፍ የሞይችል/ትችል 2.ማንበብና መጻፍ የሞቻል/ትችል 3. የመጀመሪያ ደረጃ ትምህርት(1-8) 4. የሁለተኛ ደረጃ ትምህርት(9-12) 5. በዲፕሎማ ደረጃ 6.የመጀመሪያ ዲግሪና ከዚያ በላይ		
104	የጋብቻ ሁኔታ	1.ያገባ / ች 2.ያላገባ/ች 3. የፈታ/ች 4.የሞተበት		
105	የቤተሰብ ብዛት	----------		
106	ወርሃዊ ገቢ	----------		

107	የስራ ሁኔታ	1. ግብርና 2. ነጋዴ 3. የመንግስት ሰራተኛ 4. የግል ስራ 5. ስራ የሌለው 6. ሌላ		

ክፍል፡ ሁለት የሚበረሰበን አሚላካከት በተመለከተ፡

ተ.ቁ	ጥያቄ	አማራጭ መልሶች		
201	ደረቅ ቆሻሻ በአግባቡ ሚብሰብ ጠቀሚ ነው ተብሎ ይታሰባል፣ይስማሙ	1. በጣም እስማማለሁ 2. እስማማሉ 3. ምንም አመለካከትየለኝም 4. አልስማማም 5. በጣም አልስማማም		
202	በአካባቢዎ ያሉ አነስተኛና ጥቃንቅን ደረቅ ቆሻሻ ሰብሳቢ ማህበራት የሚሰጡ አገልግሎት አጥጋቢ ነው ብለው ያሰባሉ ፡፡	1. በጣም እስማማለሁ 2. እስማማሉ 3. ምንም አመለካከትየለኝም 4. አልስማማም በጣም አልስማማም		
203	በአነስተኛa ጥቃቅን ደረቅ ቆሻሻ በሳምንት አንድ ጊዜ ቢሰበሰብ በቂ ነው ብለው ያስባሉ	1. በጣም እስማማለሁ 2. እስማማሉ 3. ምንም አመለካከትየለኝም 4. አልስማማም 5. በጣም አልስማማም		
204	ደረቅ ቆሻሻ ከመሰብሰቡ በፊት በአነስተኛ እና ጥቃቅን ሰብሳቢ ማህበራት መለየት አለበት ብለው ያስባሉ	1. በጣም እስማማለሁ 2. እስማማሉ 3. ምንም አመለካከትየለኝም 4. አልስማማም 5. በጣም አልስማማም		
205	አገልግሎት ሰጭ አነስተኛ እና ጥቃቅን ደረቅ ቆሻሻ ሰብሳቢ ማህበራት ስለ ደረቅ ቆሻሻ አሰባሰብ ስርአት በቂ ግንዛቤ አለቸው ብለው ያምናሉ	1. በጣም እስማማለሁ 2. እስማማሉ 3. ምንም አመለካከትየለኝም 4. አልስማማም 5. በጣም አልስማማም		

206	የደረቅ ቆሻሻ ማህበሰብ አገልግሎት የሚሰጡ አነስተኛ እና ጥቃቅን ደረቅ ቆሻሻ ሰብሳቢ ማህበራት ሳያቋርጡ ይሰበስባሉ	1. በጣም እስማማለሁ 2. እስማማሉ 3. ምንም አማላካከትየለኝም 4. አልስማማም 5. በጣም አልስማማም		
207	የአነስተኛ እና ጥቃቅን ደረቅ ቆሻሻ ሰብሳቢ ማህበራት መኪኖች ደረቅ ቆሻሻን ለማህበሰብ በቂ ናቸው?	1. በጣም እስማማለሁ 2. እስማማሉ 3. ምንም አማላካከትየለኝም 4. አልስማማም 5. በጣም አልስማማም		
208	የአነስተኛ እና ጥቃቅን ደረቅ ቆሻሻ ሰብሳቢ ማህበራት ደረቅ ቆሻሻ ለማህበሰብ መገዳቡ በቂ ነው?	1. በጣም እስማማለሁ 2. እስማማሉ 3. ምንም አማላካከትየለኝም 4. አልስማማም 5. በጣም አልስማማም		
209	በአካባቢዎ ያልተዘጉ የፍሳሽ ማከማጃ ቦይና ሰፊ ባዶ ቦታ ቢኖር የማህበሩ ሰራተኞች ደረቅ ቆሻሻ ከነዚህ ቦታዎች መጣል አለባቸው?	1. በጣም እስማማለሁ 2. እስማማሉ 3. ምንም አማላካከትየለኝም 4. አልስማማም 5. በጣም አልስማማም		
210	የአነስተኛ እና ጥቃቅን ደረቅ ቆሻሻ ሰብሳቢ ማህበራት ሠራተኞች ባልተፈቀደ ቦታ ላይ ቆሻሻ ቢያስወግዱ መቀጣት አለባቸው ብለው ያምናሉ?	1. በጣም እስማማለሁ 2. እስማማሉ 3. ምንም አማላካከትየለኝም 4. አልስማማም 5. በጣም አልስማማም		
211	የአነስተኛ እና ጥቃቅን ደረቅ ቆሻሻ ሰብሳቢ ማህበራት የሚሰጡ አገልግሎት ቢሻሻል የማህበረሰቡ የብር ማፈል ሁኔታ ይጨምራል ብለው ያምናሉ?	1. በጣም እስማማለሁ 2. እስማማሉ 3. ምንም አማላካከትየለኝም 4. አልስማማም 5. በጣም አልስማማም		
212	በአነስተኛ እና ጥቃቅን ደረቅ ቆሻሻ ሰብሳቢ ማህበራት የሚከፈለው ክፍያ ማጠን በቂ ነው ብለው ያስባሉ?	1. በጣም እስማማለሁ 2. እስማማሉ 3. ምንም አማላካከትየለኝም 4. አልስማማም		

		5. በጣም አልስማማም		
213	የአነስተኛ እና ጥቃቅን ደረቅ ቆሻሻ ሰብሳቢ ማህበራት ደረቅ ቆሻሻ ማላየት አለባቸው ተብሎ ይታሰባል፣ ይስማማሉ?	1. በጣም እስማማለሁ 2. እስማማሉ 3. ምንም አማላካከትየለኝም 4. አልስማማም 5. በጣም አልስማማም		
214	አሁን ባለው ሁኔታ ያለው የደረቅ ቆሻሻ አሰባሰብ አገልግሎት በቂ ነው?	1. በጣም እስማማለሁ 2. እስማማሉ 3. ምንም አማላካከትየለኝም 4. አልስማማም 5. በጣም አልስማማም		
215	በቤትዎ አካባቢ ያለው ጊዜያዊ የደረቅ ቆሻሻ ማጠራቀሚያ እስከ ማውሰድ ድረስ የሽታ ችግር አለው?	1. በጣም እስማማለሁ 2. እስማማሉ 3. ምንም አማላካከትየለኝም 4. አልስማማም 5. በጣም አልስማማም		
216	በአግባቡ ያልተጠራቀመ ደረቅ ቆሻሻ በጠፍ ላይ ጉዳት ያደርሳል ብለው ያስባሉ፡ ፡	1. በጣም እስማማለሁ 2. እስማማሉ 3. ምንም አማላካከትየለኝም 4. አልስማማም 5. በጣም አልስማማም		
ክፍል ሁለት -የተግባር ጥያቄዎች				
301	ደረቅ ቆሻሻ ከማከማደዎ በፊት ይለያሉ?	1.አዎ 2.አልለይም		
302	ማናኛ ብዙሃን ስለ ደረቅ ቆሻሻ አሰባሰብ ሚጃ ለማግኘት ጠቃሚ ነው?	1. አዎ 2. የለም		
304	ደረቅ ቆሻሻ ከመጣዱ በፊት ማላየት አለብኝ ብለው ያስባሉ?	1. አዎ 2. የለም		
305	በቤተሰብዎ ወስጥ ደረቅ ቆሻሻ የማላየት ሀላፊነት ያለው ማን ነው?	1.ማንኛውም ሰው 2.ወላጆች 3. ህጻናት 4. ሴቶች 5. ክፍያ የሚፈላቸው ሰራተኞች		

		6. ሌላ		
306	የቤትዎ ደረቅ ቆሻሻ በሳምንት ምን ያህል ጊዜ በደዳ ይወዳሉ?	1. ሁልጊዜ 2. አንድ ጊዜ 3. ሁለት ጊዜ 4. ምንም		
307	ከቤትዎ ያለውን ደረቅ ቆሻሻ ወደ ማከራቀሚያ ቦታው የሚወሰደው ማን ነው?	1. ማንኛውም ሰው 2. ወላጆች 3. የሚከፈላቸው ሰራተኖች 4. ሴቶች ብቻ 5. ወንዶች ብቻ 6. ሌላ		
308	ከቤትዎ ያለው ደረቅ ቆሻሻ ከመጣዱ በፊት በምን ዓይነት ዕቃ ያስቀምጣሉ?	1. በፕላስቲክ 2. በኬሻ 3. ክዳን በሌለው እቃ 4. ክዳን ባለው እቃ 5. ሌላ		
309	የቤትን የደረቅ ቆሻሻ አቀማመጥ ሁኔታ እንዴት ያዩታል	1. ጥሩ አይደለም 2. በጣም ጥሩ አይደለ 3. ጥሩ ነው 4. በጣም ጥሩ ነው 5. ሌላ		
310	በቤት ያለው ደረቅ ቆሻሻ ከማከሰብዎ በፊት ለምን ያህል ጊዜ ይቀመጣል	1. አንድ ቀን 2. ከ2-3 ቀናት 3. ከ3-4 ቀናት 4. ከ6-7 ቀናት 5. ከ7 ቀናት በላይ 6. ሌላ		

ክፍል-4 የሚከታተሉ ጥያቄዎች

401	ጊዜያዊ የደረቅ ቆሻሻ ማከማቻ እቃ አለዎት?	1.አዎ 2.የለም
402	የደረቅ ቆሻሻ ማከማቻ እቃው ክዳን አለው ?	1.አዎ 2.የለም

403	ደረቅ ቆሻሻ ከማከራቀሙ በፊት ይለያሉ?	1.አዎ 2.የለም
404	በቤትዎ አካባቢ ያልተዘጉ የፍሳሽ ማስወገጃ ቦዮች አሉ ?	1.አዎ 2.የለም
405	የደረቅ ቆሻሻ ማከራቀሚያ እቃው ለአያያዝ ቀላል ነው?	1.አዎ 2.የለም
406	የደረቅ ቆሻሻአቀማመጥ ሁኔታው ጥሩ ነው ወይ?	1.አዎ 2.የለም

Declaration paper

I, the undersigned MPH student declared that this thesis is my original work in partial fulfillments of the requirement for the degree of masters of public health in environmental health science.

Name ----------

Signature ----------

Date ----------

Place of submission: school of Public Health College of medicine and health science, university of Gondar.

Date of submission June, 2015

This thesis work has been submitted for examination with our approval as university advisors.

Advisors name	signature	date
1st Daniel Haile (Assist.Prof.)	----------	----------
2nd Resom Berhie (Bsc.MPH)	----------	----------